

# Vitamin Research News

Dedicated to the Scientific Pursuit of Better Health

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## Breast Health: Iodine and Other Nutrients Play a Crucial Role

by Jorge D. Flechas M.D., M.P.H.

Over the next few weeks, the country will nationally be focusing on breast cancer. Of all the cancers women develop, 29 percent are breast cancer. By age 25, 1 in 19,608 women will develop breast cancer. By age 50, this number changes to a shocking 1 in 50 and by age 75 an even more dismal statistic: 1 in 11. In a total lifetime, one woman in 8 will develop breast cancer.

In January 2005, cancer became the leading cause of death in the United States. Each year about 211,000 cases of breast cancer are diagnosed in the USA. The number of new breast cancer cases increased from 82 per 100,000 women in 1973 to 195 per 100,000 women in 2000. The main cause of death prior to that was heart disease. The

estimated death rate from breast cancer is 40,600: 40,200 females and 400 males.

Much is said in the public media about a genetic link with this cancer. Yet, genetics play only a small role in the development of breast cancer—less than 7 percent. In the September 8, 2006 issue of *USA TODAY* one of the lead articles was on Killer Cancer Genes ID'd. It mentioned that 122 breast cancer-causing genes have been identified. The scientist quoted in the article mentioned that we may not be able to tackle all the genes in a tumor but that we may have to work on silencing the cancer-causing genes. Doctors in the future may find that silencing even one of these genes could be enough to keep a tumor in check or kill it.

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## Prostate Health: Nutritional Support for Man's Most Pressing Health Concerns

by Chris D. Meletis, ND

There are 2.8 million cases of prostate disease reported annually in the United States.<sup>1</sup> Unfortunately in 2004 alone there were approximately 230,110 new cases of prostate cancer, according to the American Cancer Society. Prostate cancer is the second leading cause of cancer deaths of men in the United States, after lung cancer, and the sixth leading cause of death of men overall over the age of 65.

The reality is that few men ever consider the walnut-sized fibrous gland located just below the bladder, until it starts to give them

trouble. A survey reported in the *London Times* found that 89 percent of the men surveyed did not know where the prostate was located. Whether or not the anatomical position may escape the vast majority of men, the sobering fact is that after the age of 50, the prostate begins to hypertrophy, or increase in size. This enlargement of the prostate is known as benign prostatic hyperplasia (BPH). Often one of the initial annoyances of BPH arises from the fact that the urethra (the tube that carries urine from the bladder) runs through the middle of the prostate.

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# Breast Health

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They mention in the article that treatments could be a decade or more to develop.

Yet, the technology for tomorrow is here today in the supplements we have at our disposal. For example, methylation of DNA and gene silencing are affected by nutrition. Many articles exist on silencing genes and how the use of methyl-folic acid, methyl-vitamin B12, selenium, trimethylglycine powder and zinc help to methylate the DNA.

## Breast Cancer Risk Factors

Many breast cancer risk factors have been identified such as a high-fat diet, low-fiber diet, tobacco use, and alcohol use. These risk factors can be modified by an individual. There are other factors that are mostly out of a woman's control. The longer a woman is exposed to estrogen in her body, for example, the higher her risk. This would include early age at menarche, late age at menopause, long-term use of birth control pills and nulliparity (never having given birth). There seems to be a group of women whose use of birth control pills for more than 4 years puts them at higher risk before age 45. Women who take thyroid hormone are also at higher risk for developing breast cancer.<sup>1</sup> Conversely, a lower risk for breast cancer is

seen in women who are late in age at menarche, early age at menopause, and early age at first pregnancy.

## Fibrocystic Breasts

In the *New England Journal of Medicine*, July 22, 2005 issue, there was a lead article showing that benign breast changes in women are associated with breast cancer. Benign breast changes is a new term for what we have called fibrocystic breast disease (FBD) in the past. FBD is currently affecting about 84 percent of the female population in North America.<sup>2</sup> FBD is a misnomer because the medical problem is not a disease in the strictest sense. It is more a problem of cyclic breast pain that is associated with the menstrual cycle. In some patients the breast pain is seen daily, regardless of their menstrual cycle. Tissue biopsy for these benign breast changes that do grow larger are called proliferative lesions and if they do not grow they are called non-proliferative lesions.

Non-proliferative lesions (non-growers) can include cyst of the breast, radial scars, apocrine cells which generally make up sweat glands—the breasts are classified as a modified sweat gland—fibroadenoma, and hyperplastic cells that are normal in appearance under the microscope but are more numerous than usual. Proliferative lesions with normal cells are called sclerosing adenosis, which have a slightly increased risk (1.5 to 2 times). There are proliferative lesions with abnormal or atypical cells that are called hyperplasia—high degree with a moderate increased risk of breast cancer of (4 to 5 times), lobular neoplasia and intraductal papilloma. As a rule in medicine, the more abnormal cells look under the microscope, i.e., the more atypical the cells look, the higher the risk of cancer being present.

## Iodine's Supportive Role

Back in the early 1990s it was noted that patients who had iodine deficiency had associated benign breast changes. By giving these patient's iodine the breast changes that were present would regress.<sup>2</sup> It had been noticed a few years earlier that in animal studies, where the animal had

been denied access to iodine, the animals developed benign breast changes like humans.<sup>3-5</sup> In animal studies, researchers have been able to produce breast cancer in animals by depriving them of iodine.<sup>4</sup>

In my own personal medical practice I have literally seen the regression of cysts, nodules, scar tissue, and painful breast with the use of 50 mg of Iodoral® per day for 2-3 years. The breast pain goes away in just a few weeks, but the cyst/cysts, scar tissue and breast nodules take up to 2 to 3 years to resolve. On mammograms I have seen a 50 to 80 percent reduction in the scar tissue present in the breast. Studies are needed to show via biopsy that the many different types of FBD will regress with iodine supplementation.

Before starting on iodine therapy, a patient should have their thyroid hormone values investigated. A doctor should check the size of the thyroid for enlargement and or nodules. An iodine-loading test should also be done prior to starting iodine therapy to establish the need for iodine therapy. In this test the patient is given 50 mg of iodine and a 24-hour urine test is then collected. The iodine level in the urine is measured. The more saturated the body is with iodine the higher the level of iodine excreted. The more saturated the body is, the less breast abnormalities have been seen. The test is repeated at 3 months to document increasing saturation. If saturation is not occurring then further investigation is called for to find out why saturation isn't happening.

## Additional Support

Several other nutrients/hormones are also important to breast health and can be used in conjunction with Iodoral. DIM (diindolylmethane), the nutrient derived from cruciferous vegetables, for example, is influential in helping the body metabolize estrogen. DIM has been shown to change the way estrogen is metabolized. Metabolism of the natural estrogen estradiol occurs via one of two pathways. The tumor enhancer metabolic pathway, 16 alpha-hydroxylation, is elevated in patients with breast and endometrial cancer and in

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those at increased risk of such cancers. This increased 16 alpha-hydroxylation activity has been shown to precede clinical evidence of cancer, and it represents a significant risk factor for developing estrogen-dependent tumors.

Conversely, when estrogen veers away from the 16-alpha pathway and takes another route out of the body, the incidence of cancer decreases. This alternate route, which acts as a tumor suppressor metabolic pathway, is called 2-hydroxylation, a process that transforms estrogen into 2-hydroxyestrone (20HE1), an anti-estrogen. Healthy individuals not at risk for breast or endometrial cancer bypass the 16-alpha route and instead metabolize estrogen through this preferable pathway. DIM signals the body to metabolize estrogen via the tumor suppressor 2-hydroxylation pathway.

In addition to this more well known estrogen-related mechanism of action of DIM, recent research also indicates that DIM can prevent angiogenesis, the process by which new blood vessels develop. Cancer cells use the development of new blood vessels to spread throughout the body. In mice, DIM inhibited angiogenesis by up to 76 percent.<sup>6</sup> In addition, in mice implanted with human breast cancer cells, tumor growth was inhibited by 64 percent in animals treated with DIM.<sup>6</sup>

Another means of supporting breast health is by using natural progesterone cream. A syndrome known as Estrogen Dominance is prevalent in women, especially postmenopausal women. According to progesterone researcher Dr. John Lee, estrogen unopposed by progesterone results in a number of adverse effects including painful breasts, fibrocystic breast disease, and breast cancer.

Estrogen dominance usually occurs at menopause, when progesterone production falls to approximately 1 percent of its pre-menopausal level. At this time, the production of estrogen falls to about 50 percent of its pre-menopausal levels. This dramatically alters the estrogen: progesterone ratio, causing estrogen to become toxic

without progesterone to oppose it. As a result, the risks for breast and uterine cancer and fibrocystic breast disease increase.<sup>7</sup> Therefore, progesterone also has a crucial role to play in maintaining breast health.

Vitamin D is another breast-supportive nutrient. Women who have mutations in their vitamin D receptor gene are nearly twice as likely to develop breast cancer compared to women who do not have the mutation. The vitamin D receptor gene controls the action of vitamin D in the body. Scientists have found that Caucasian women with certain versions of this gene not only have an increased risk of breast cancer but also may suffer from a more aggressive form of the disease if it spreads. The results suggest that vitamin D does indeed play a part in protecting the body against breast cancer, as past studies indicate.

Five to ten percent of breast cancer cases are due to already established gene mutations such as BRCA1. However, the underlying cause of breast cancer in women who do not have this gene and have no family history of the disease has remained a mystery. The study suggests that the mutation in the Vitamin D receptor gene may have a role to play in disease development in women who would not ordinarily be expected to develop the disease.<sup>8</sup>

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## The President's Desk

### VRP's Health Seminar Series

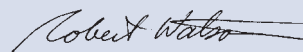
At VRP, we are dedicated to empowering healthy aging through education. We do this in a number of ways, including publishing this newsletter. We also co-hosted The Monaco Anti-Aging Conference and have since made a commitment to hosting webinars about important health topics. Now, I am pleased to announce that we will take this tradition one step further by hosting seminars that will provide health information that is of the greatest interest to you and will support your journey toward better health.

Our first two-day seminar, "**Recent Advances in the Use of Iodine in Medical Practice**," is February 9-10, 2007 at the Doubletree Paradise Valley Resort in Scottsdale, Arizona. Expert panelists will attempt to eliminate any doubt that exists that this controversial nutrient is beneficial to so many aspects of health.

Seminar attendees will have the rare chance to interact and learn from a panel of distinguished iodine experts including Guy E. Abraham, MD, renowned iodine researcher whose writings have revolutionized the way physicians use iodine in their practice; Jorge D. Flechas, MD, who pioneered iodine testing; David Brownstein, MD, author of *Iodine: Why You Need It, Why You Can't Live Without It*; Donald W. Miller Jr., MD, a cardiac surgeon and professor of surgery at the University of Washington, Seattle; William Shevin, MD, DHT, a practicing physician in Woodstock, Connecticut; and Bernard A. Eskin, MS, MD, a professor of obstetrics and gynecology and psychiatry and adjunct professor of pharmacology at Drexel University College of Medicine in Philadelphia.

Iodine's role in breast health is a particularly applicable topic to address in October, as it is Breast Cancer Awareness Month. (See Dr. Flechas' Breast Health article in this newsletter). It is also a topic that has touched me personally since my mother-in-law recently passed away from this disease.

Space is limited for the seminar so make your reservations as soon as possible. To register or to receive more information, please call Vitamin Research Products at 1-800-877-2447. CME credits will be available for medical professionals.



**Robert Watson**  
President/CEO

# Prostate Health

*Continued from front page*

At all ages, African-American men are diagnosed with the disease at later stages and die of prostate cancer more often than do Caucasian men, even in the military where there is a controlled and mandatory healthcare system. Likewise, Asian men have less overall prostate issues.

## Prostatitis vs. BPH

Some pathologists believe the prostate gland is the most commonly diseased internal organ of the human body.<sup>2</sup> Of the three major prostate diseases—prostatitis, benign prostatic hyperplasia, and prostate cancer, prostatitis is the most common prostate disease, resulting in more physician visits than either benign prostatic hyperplasia or prostate cancer, according to the National Institutes of Health.<sup>3</sup> Up to 50 percent of all men experience symptoms of prostatitis during their lifetimes.<sup>4</sup> Prostatitis was found in 40 (44 percent) of 91 men at random autopsy.<sup>5</sup> Another study of 100 consecutive autopsies on men who died suddenly demonstrated the prevalence of histologic signs of prostatitis that increased with age and was highest when benign prostatic hyperplasia was also present. Prostatitis was present in 22 percent of men under 40 years of age and in 60 percent of those over 40 years of age.<sup>6</sup> In fact, the line between benign prostatic hyperplasia and prostatitis is sometimes unable to be discerned. Benign prostatic hyperplasia and prostatitis cannot be distinguished by symptoms, and some believe that they may be the same disease. Prostatitis usually occurs at an early age, while prostate cancer appears decades later, in the same part of the prostate gland, the peripheral zone.

Proper diagnosis of prostate symptoms is imperative. All three prostate diseases require accurate diagnosis due to their serious nature and consequences. Once diagnosed and treatment is initiated, a variety of natural medicines are available to mitigate the symptoms of prostate diseases.

## Hormonal Triggers

An important consideration for men over the age of 40 is that the level of free testosterone begins to diminish, while levels of prolactin, estradiol, and sex hormone-binding globulin (SHBG) increase. Along with these hormonal transitions levels of dihydrotestosterone (DHT), the active metabolite of testosterone in the prostate increase, and binding of DHT to prostate tissue increases. Since DHT stimulates the prostate cells to enlarge it is a leading contributor of BPH.

The enzyme, 5-alpha reductase, converts testosterone into DHT. Thus one of the primary goals is to inhibit this enzyme, thereby down-regulating the formation of DHT, and its prostate-enlarging effect. All too often testosterone regulation blinds us to the fact that estrogen also plays a role in BPH by inhibiting the breakdown and removal of testosterone and DHT. The increased ratio of plasma estrogen/testosterone is due to the increased formation of estrogens formed by the conversion of androgens to estrogen by the enzyme, aromatase. Enzyme inhibitors to prevent this estrogenic conversion are used to modulate aromatase.

## Clinical Approaches

**Zinc:** Substantial supplementation with the mineral zinc is paramount to prostate health. Zinc works in a number of ways in the prostate gland, namely with hormone metabolism. Prostate epithelial cells uniquely accumulate significantly higher levels of zinc than any other cells in the body. It has been shown that the accumulation of high intracellular zinc levels in specific prostate cells results in the induction of cell-mediated self-growth control and the inhibition of cell growth. The apoptotic effect is due to zinc induction of self-regulated cell growth genes in the mitochondria.<sup>7</sup> Zinc works to inhibit the activity of the enzyme 5-alpha-reductase, which converts testosterone to dihydrotestosterone (DHT).<sup>8</sup> DHT is known for its adverse effects on prostate growth and other male-hormone related conditions. In addition to inhibiting the activity of this enzyme, adequate zinc acts to prevent the binding

of specific testosterone by-products to prostate cell receptors, thereby preventing these hormonal by-products from exerting their effects on the prostate gland. Food sources of zinc include sunflower seeds and pumpkin seeds. Patients may add a handful or two to their daily diet, or supplement with 60 mg of zinc, each day. Though it is recommended that any supplementation with greater than 30 mg per day for more than a month warrants the addition of 2-3 mg of copper daily to prevent an inadvertent copper deficiency that can arise from unopposed zinc supplementation.

**Serenoa repens (Saw palmetto):** Repeated in numerous clinical studies, the extract of this plant has been shown to significantly diminish the signs and symptoms of benign prostatic hypertrophy. The mechanism of action involves inhibition of DHT binding to prostatic cellular receptors along with interfering with the enzyme 5-alpha-reductase. Statistically, 90 percent of men with mild to moderate BPH symptoms experience relief when taking this botanical for 4-6 weeks.<sup>9</sup> Symptoms of nocturia were resolved, while participants reported a better quality of sleep. Objective findings demonstrated a decrease in prostate size and an increase in urinary flow volume. A study comparing saw palmetto to finasteride revealed that saw palmetto produced similar improvement in urinary symptoms and flow compared to the pharmaceutical, and the use of the botanical is associated with fewer adverse treatment events.<sup>10</sup>

**Pygeum Africanum (Pygeum):** The bark of this plant has historically been used for the treatment of urinary tract disorders. Major components of the bark are fat-soluble sterols and fatty acids. Like saw palmetto, pygeum has been studied extensively for the treatment of BPH. These studies have revealed that although the two botanicals have a similar mechanism of action, pygeum is most effective at reducing the signs and symptoms of BPH in early-diagnosed cases. A meta-analysis of men using pygeum for BPH signs and symptoms reported that nocturia was reduced by 19 percent and residual urine volume by 24 percent while peak

urine flow was increased by 23 percent. Adverse effects due to *Pygeum Africanum* were mild and comparable to placebo.<sup>11</sup> Typically, however, pygeum is regarded to be less effective than saw palmetto. That being said, however, because the two botanicals have somewhat overlapping activities, combined use of the two may result in greater efficacy.

**Stinging nettle (*Urtica dioica*):** Extracts of this plant have also been shown to be helpful in the treatment of BPH. However, fewer studies exist on this plant. One study has shown it to be more effective than placebo. Like the two previous botanicals, urtica appears to inhibit the binding of DHT to prostatic cellular receptors, preventing the growth effects of the hormone.

**Beta-sitosterol:** Beta-sitosterol is a plant sterol with a chemical structure similar to cholesterol with an ethyl group added at position 24. Plant sterols, including beta-sitosterol and others are widely distributed in fruits, vegetables, nuts, and seeds. About 175-200 mg of beta-sitosterol is consumed daily in the average diet. For treatment of benign prostatic hyperplasia, beta-sitosterol binds to prostatic tissue, inhibits prostaglandin synthesis in the prostate, and has anti-inflammatory activity.<sup>12</sup> There is some preliminary evidence that beta-sitosterol might also have anticancer and immune stimulant effects. For benign prostatic hyperplasia (BPH) and prostatitis, a typical dose is 60 to 130 mg of beta-sitosterol divided and given in 2-3 doses daily.

**Essential fatty acids:** Administration of EFA's can result in significant improvement in prostatic disorders, as supplementation can correct underlying EFA deficiency, common in the standard American diet. Often patients with prostate disorders have abnormal ratios of lipid in their prostatic and seminal fluids. Additionally, avoidance of *cholesterol* is important since free-radical damaged cholesterol is carcinogenic to the prostate. Medicines that lower cholesterol have been shown to exert a favorable influence on prostate diseases. *Alcohol* intake has been directly correlated with prostate disease as well.<sup>13</sup> Men who consumed at least 25 ounces of alcohol per

month were directly correlated with experiencing increased symptoms of BPH.

**Lycopene:** Lycopene is one of the more than 500 known carotenoids and has been identified as an important nutrient in prostate health. Researchers reviewed 43 fruits and vegetables; only tomato-based products (with the exception of tomato juice) and strawberries were found to be protective against prostate cancer. The protective properties of tomato-based foods have been attributed to their high lycopene content.

It appears that lycopene can have a supportive role in prostate disease as well. In the December 19, 2001, *Journal of the National Cancer Institute* researchers reported on 32 men with prostate cancer who were about to undergo radical prostatectomy. They began a three-week diet of pasta with tomato sauce—the equivalent of roughly 30 mg of lycopene daily—prior to their surgery. This resulted in markedly increased prostate lycopene concentrations, accompanied by a 21.3 percent reduction in leukocyte oxidative DNA damage. In addition, serum PSA levels (a marker for prostate cancer) dropped 17.5 percent, from a mean of 10.9 ng/mL before the diet to 8.7 ng/mL after the diet. Another impressive result of the study was the rate that DNA damage declined in the patients consuming diets high in lycopene. Oxidative DNA damage in prostate tissue from the men consuming high-lycopene diets was 28.3 percent less than in tissue samples from seven randomly selected prostate cancer patients not consuming a high-lycopene diet.<sup>14</sup>

### Vitamin D and the Prostate

The use of vitamin D and prostate cancer prevention is also gaining more attention in recent investigations. The full protective properties of vitamin D as an intervention tool for prostate cancer is still being explored. It appears that unlike colon cancer cells, prostate cancer cells cannot transform vitamin D from its less active form (25(OH)D) to its more active form, (1,25(OH)<sub>2</sub>D) and must therefore rely on circulating levels of 1,25(OH)<sub>2</sub>D.<sup>15</sup> This raises an intriguing link since elevated

intake of calcium and calcium-dense foods such as milk appear to increase the incidence of prostate cancer.<sup>16</sup> Higher levels of calcium will lead to lower levels of active vitamin D (1,25(OH)<sub>2</sub>D); researchers speculate this is one reason why vitamin D has a protective role against prostate

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# EpiCor™: Its Use and Safety in Autoimmune Health

by Karen Sadowsky Kaufman, MS, CCN

This newsletter has featured a number of articles about the novel dietary supplement EpiCor™. The writings focus on the many ways EpiCor can strengthen one's immune system and improve its functioning. However, none of the essays written thus far have directly addressed the issue of autoimmunity. In this article I will address EpiCor's potential role in autoimmunity from my own personal perspective.

Some readers may remember a little about my personal story. Over the past 16 years, I've struggled with systemic autoimmune disease of the connective tissue and have had to deal with the complications of systemic lupus erythematosus (SLE). In responding to these conditions, I've always been proactive. I have integrated medical therapies with lifestyle changes and nutritional supplements. But the last three years have proved an extraordinary struggle. Fortunately, with the help of physicians and some pharmaceutical drugs, I began to win the battle this past spring. SLE is a chronic lifelong systemic illness, so it would be foolish for me to say I've won the war.

When EpiCor became available, I thought long and hard about whether I should take it. Lupus is an autoimmune disease and I didn't want anything to over stimulate my immune system. After all, I would do anything to prevent a painful and difficult relapse. You know the theory: "if it isn't broken, why fix it"? But it is precisely because SLE presents lifelong challenges that I chose to take a chance on the novel immune system modulator EpiCor. I might add that I've never taken a supplement that targets the immune system before, unless it was an immune system booster and I was already ill with a cold or flu.

This was not an easy decision for two reasons. SLE is the prototypic autoimmune disease. Although it's been the sub-

ject of a lot of research, at this point no one knows what causes SLE. It is probably one of the most difficult autoimmune diseases to understand because in SLE any organ or organ system can become the target of an immune system that has lost its way: the joints, the heart, the lungs, the kidneys, the liver, the brain, the central nervous system, the peripheral nervous system, even the blood system. In fact, in fifty years there has not been one drug that has made it to the market that specifically targets SLE. You can see the difficulties. It is disease characterized by periods of exacerbations and remissions. People who are affected by SLE are like snowflakes—every patient is different and no two patients are affected the same way.

The second reason I hesitated to take EpiCor is because it is a new and unique product. It has been the subject of a lot of research, but the research is in its infancy. Thus far the research has been conducted in vitro [in a Petri dish], in animals, or in a small number of healthy human subjects. As with most things in medicine and nutritional supplements, it will be years before we have the results of long term clinical trials. Most of the results of experiments already conducted have yet to be published. I must base my decision on what is known about the biochemistry of this novel nutrient and what I know about the mechanism and physiology of autoimmune disease. Actually this is the way I have approached every medication and nutritional supplement I already take or have taken. I've convinced my mainstream physicians with my logic. My physicians have cooperated with me and have prescribed medications for "off label" use based on my research. In the beginning they may have thought I was crazy. But my PCP now says: "Karen, eventually the literature will catch up with you." In some cases, I've even contacted

the MD and PhDs who are currently researching the disease.

This article is a vehicle for me to share with you my logic for taking EpiCor, which I started in early July. Perhaps readers will take my reasoning and apply it to their own situation.

## Autoimmune Disease

I don't have the space in this article to go into an in depth explanation of autoimmunity or SLE. What all autoimmune diseases have in common is the immune system loses the ability to distinguish healthy cells from a pathogen (bacteria, virus, parasite or fungus) and mounts a campaign against the healthy cells. It is the loss of self-recognition that is at the core of autoimmunity. In type I diabetes, the immune system thinks the insulin secreting glands of the pancreas (the islet cells) are a harmful virus or bacteria. Type I diabetes is an organ specific autoimmune disease as are Graves' disease and multiple sclerosis (MS). SLE and rheumatoid arthritis (RA) are examples of systemic autoimmune diseases.

No one knows what causes a person to develop an autoimmune disease. There are a number of theories that have been proposed. For example, certain people are genetically predisposed to develop an autoimmune disease. The disease is then triggered through some environmental insult. There seems to be a huge array of potential triggers. In many cases the trigger is a bacteria or virus.

## Why EpiCor?

### Secretory IgA

The skin provides an important barrier against invading bacteria, viruses and other pathogens. The second barrier against invading pathogens is the mucosal membranes that line the eyes, nose, throat and GI tract. The mucous membranes

secrete immunoglobulins called secretory IgA (sIgA). A key ingredient in the effectiveness of the mucosal barrier is the levels of sIgA. Since people taking EpiCor had higher levels of salivary sIgA, a flu virus is more likely to be killed on contact. In my case, the event that likely triggered my immune system to malfunction was a simple case of influenza (the flu virus). Therefore, it is definitely in my best interest to prevent future infections. In addition, I am taking a medication that suppresses or compromises my immune system. While a cold or flu will not kill me, it certainly won't help.

### **Antioxidant Capabilities**

SLE and many other systemic autoimmune diseases are characterized by chronic inflammation. Chronic inflammation causes an excess of free radicals. That excess of free radicals increases the body's requirement for antioxidants. EpiCor has an oxygen absorbing capacity (ORAC) significantly greater than that of blueberries. In addition, healthy people exposed to EpiCor had red blood cells with a higher level of glutathione (one of the body's most important free radical quenching agents).

### **T cell activity**

In vitro studies of EpiCor indicated a shift in T helper (Th) cell populations. T helper cells are involved in cell-to-cell communication. They can ramp up the immune system and call in reinforcements. There are both Th1 cells and Th2 cells. Th1 cells are involved in inflammation whereas Th2 cells are less inflammatory. In vitro studies demonstrated a shift from Th1 to Th2 when T helper cells were exposed to EpiCor. I'll admit it's a leap from in vitro to in vivo. However, given the potential benefits of EpiCor versus the risk profile, this was a leap I was prepared to make.

### **Reduction of Immune Complexes**

The study of autoimmune diseases has increased tremendously in the last twenty years. The research is probably an outgrowth of the research into the HIV virus. Autoimmune disease was considered fairly rare. There were pockets of researchers working in isolation on the more common diseases: rheumatoid arthritis (RA), mul-

iple sclerosis (MS), and insulin dependent diabetes mellitus (IDDM). It was not until the 1990s immunologists realized there may be a commonality to all autoimmune diseases in spite of the fact that in each disease, the immune system was targeting different parts of the body. In the case of RA the joints become the target, in MS it is the myelin sheath, and in IDDM it is the islet cells of the pancreas.

Although SLE was identified 100 years ago, we are only now beginning to understand how the disease can affect the individual. In SLE, most of the research has focused on SLE and kidney disease. So once again, I need to extrapolate what is known about how the kidney is damaged in SLE and apply it to how the brain and central nervous system are damaged. One can biopsy a kidney, but we generally don't do that to the brain. There are many different hypotheses to explain organ and tissue damage in SLE. One of the things we definitely know is happening is immune complexes are deposited in places where they don't belong. One of the ways the immune system deals with a pathogen is by forming an antigen/antibody complex.

T cells and B cells are part of the adaptive immune system and these cells signal each other to act in certain ways. An in depth discussion of the immune system is impossible here and has been addressed by Dr. Meletis in a number of articles in recent editions of *VR News*. However, here is a thumbnail sketch how the body forms immune complexes.

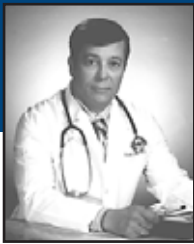
The body makes a lot of a specific type of white blood cell called a lymphocyte. Lymphocytes begin their life in the bone marrow. Some lymphocytes are released into the bloodstream and sent to the thymus gland where they become T cells. Then the T cells circulate in the lymph system in search of foreign pathogens. Other lymphocytes are released into the bloodstream and are called B cells. B cells circulate in the bloodstream on the look out for pathogens. Both T cells and B cells are able to recognize a receptor on the foreign protein called an antigen. Each can form an antibody to that specific antigen and come

together in a "lock and key" fashion. Not only does that render the pathogen harmless, it also serves as a signal to the rest of the immune system to start replicating various T cells and B cells. The combination of the antibody and antigen forms the immune complex. In a healthy person the immune complex is cleared from the body through a variety of mechanisms—the complement system and phagocytosis. In an autoimmune disease, the immune system forms antibodies against the body's own self proteins so an excess of immune complexes are in the blood stream. The immune complexes are produced continually so the body's mechanism for clearing these complexes is overwhelmed. The immune complexes can fall out of circulation or deposit in various tissues. Often in SLE they deposit in the kidney. Eventually this can stop the kidney from functioning. Immune complexes have also been found in the vasculature, in the brain, and in the joints. Healthy subjects who were exposed to EpiCor had lower levels of circulating immune complexes.

### **Conclusion**

When I started taking EpiCor in July, I was feeling better than I have felt in five years. It is because I have been feeling so well and because I want to stay well that I chose to try one capsule of EpiCor per day. As mentioned above, I was at first afraid that EpiCor could cause a relapse. But since I have been consuming this immune modulator I have continued to feel extraordinarily well. It's extremely unusual for me to feel this good for this long a time, especially at this time of the year, when my condition has traditionally been at its worst.

Furthermore, in the past, as the cold and flu season approached I lived in fear that I would contract a virus that would trigger a worsening of my autoimmune condition. However, recently, many of my acquaintances caught the stomach flu, but I remained free of the virus. Consequently, now that I am taking EpiCor, I am more confident than ever that I may survive the cold and flu season unscathed, allowing me to take a few more steps on my journey to better health.



# CUSTOMERS' CORNER

by Ward Dean, MD

VRP Medical Director

## Depression and Anxiety

Dear Dr. Dean,

**My internal medicine doctor has prescribed Lexapro (escitalopram oxalate) for depression and anxiety, which are a result of severe and chronic marital difficulties. What do you think of this drug and does VRP offer a natural alternative?**

Ms. W.

Dear Ms. W.,

I would consider *L-Tyrosine* or *L-Phenylalanine*, in dosages ranging from 500 mg up to 2,000 mg. This should be taken on an empty stomach in the morning, or early afternoon. Some people respond better to one or the other—but they both do essentially the same thing. These amino acids convert into the stimulatory neurotransmitters, epinephrine and norepinephrine. Each has been clinically tested, and has been shown to be very helpful in some cases of depression.

SAMe is also a good thought. It works very fast, if it's going to work.

You might also try *5-HTP* (200-300 mg at bedtime) or *Tryptophan* (1,500-2,000 mg at bedtime).

Hypothyroidism is a common treatable cause of depression. Please see my article "Neuroendocrine Theory of Aging, Part IIIb. The Energy Homeostat (Thyroid Complex)" available at [www.vrp.com](http://www.vrp.com). If it appears that may be a cause, I suggest thyroid replacement, or supplementation with *Iodoral*®.

Ward Dean, M.D.

## Fibromyalgia and Crohn's

Dear Dr. Dean,

**Are there nutritional supplements for fibromyalgia and Crohn's disease?**

Ms. T.

Dear Ms. T.,

For my Crohn's patients I recommend a combination of *SeaCure*, *Culturelle*®, *AdaptaPhase*® I & II, *Detox FiberPlex*, and/or

*Enteraklenz* and *Chitosan*. *DHEA* and *Pregnenolone* are also often on the low side and are usually included.

For *AdaptaPhase II* recommendations I use ten caps per day for twenty days, off ten days, and repeat. This cycle can be used indefinitely. In seriously ill patients I've resorted to testosterone or anabolic steroids to counteract the wasting. *UniZyme*™ is also helpful during flare-ups.

Recently, I've started adding *CeaseFire*™ to the regimen to go after *H. pylori*, which may be a causative/contributing factor. Preliminary results in several of my Crohn's patients taking *CeaseFire* have been favorable.

Two products that are specific for fibromyalgia are *MPA Caps* (Magnesium-Potassium Aspartate), and *Malate Complex*. Most folks with fibromyalgia are also hypothyroid. Consequently, I would recommend *Iodoral*®.

One of the most effective treatments for fibromyalgia is GHB, now available as a prescription drug. Your physician can learn about prescribing *Xyrem* by going to the manufacturer's website ([www.orphan.com](http://www.orphan.com)).

Ward Dean, M.D.

## Rosacea

Dear Dr. Dean,

**My sister has asked me to pass on this question to you concerning a skin problem she is experiencing. Below is her question:**

**"I had an allergic reaction on my face in May 2004. When this occurred I had just recently tried a new skin care line, and I was developing a few small bumps. Then I tried using a dermabrasion kit and my whole face broke out in little bumps. I thought it would go away on its own. It did not. The doctor and a number of dermatologists have given me numerous products, including Diprolene, which I believe is responsible for the discolored patches on my face and the redness that goes from one side of my nose circling down across my chin back up to the other side of my nose. My doctor commented on the redness saying, 'Have you ever thought you might have rosacea?' to which I responded,**

**'My face was not like this before I used the Diprolene.'**

**"Since then I have been given antibiotics, Sulfa type skin products, antibiotic lotions, and special cleansers. My face has gotten worse. It's splotchy red with numerous small and large bumps, which get infected, and the larger bumps are quite tender. I don't even like to look in the mirror anymore because I just get upset and cry. And now the bumps have traveled down onto my neck and chest. At times, it feels like my skin is chapped and sunburned.**

**"I looked up allergies/acne on your web site and found some information on *Liquid Silver* (400 PPM) and wondered if it would be helpful for clearing up all the infected bumps. I have also started taking *Folic Acid*, *Vitamin E*, and *Zinc* for my immune system along with my regular vitamins. I also just added *GLA* (Evening Primrose Oil) to my vitamins.**

**"Also, I believe I am starting to go through menopause (which probably isn't helping this condition) and I quit smoking in January."**

**Any ideas or recommendations you can give to my sister would be greatly appreciated.**

Ms. D.

Dear Ms. D.,

Unfortunately, what your sister has certainly does sound like rosacea, and I don't think it's due to the new skin care line or the other treatments that she has tried. I don't think anyone really knows what causes rosacea, and I don't know of any treatment that works universally or equally well on everyone. That being said, I would give the *Mild Silver Protein* a try. It is a very potent antimicrobial, as well as a skin-healing agent. I'd apply it at least twice per day.

Hormone shifts/imbalance have been implicated in worsening of rosacea, so it wouldn't hurt to check her hormone balance through one of VRP's *Hormone Testing Kits*. Hyperbaric oxygen has been useful in many cases of rosacea, so the fact that your

*Continued on page 9*

sister stopped smoking was probably a good idea.

She might also want to try high doses of MSM, which has been reported to help in some cases. Furthermore, much of the current research is linking an infection with *h. pylori* to the development of rosacea. She may want to try mastic gum (*CeaseFire™*), which is highly effective in eradicating this widely present gastric bacterium.

Finally, I'd check the Internet for rosacea support groups, which will undoubtedly provide reports of other alternative therapies for this troubling, difficult-to-treat condition.

Ward Dean, M.D.

### Graves' Disease, Hypertension

Dear Dr. Dean,

I had radioactive iodine to "treat" Graves' disease in 2000. I have felt horrible ever since. I suffer from constant hemorrhoids, weight gain (from 140 lbs to 235 lbs in 5 years), depression, concentration problems, high cholesterol and high blood pressure (150/100).

I now have a holistic doctor who has me on 30 mg Armour® Thyroid and 200 mcg Unithroid® to try to get the highest balance of free T3/T4 and so far he has been pretty successful. He says from a muscle reaction test that I am at about 80 percent. However, I have not been able to get bloating and my weight under control. My doctor does not want to start me on prescription drugs for hypertension, but acknowledges that we need to get it under control. I also exercise 6 days per week, including aerobics and resistance training—however, it has not helped much. I have to force myself to exercise just to keep myself going.

I just started taking *Forskolin* (500 mg per day), *L-Carnitine*, and *CLA*. Do you have any recommendations for help with weight gain? Also should I take *Pressure-FX®* to get hypertension under control? Anything you can suggest would be greatly appreciated.

Thank You.  
Mr. S.

Dear Mr. S.,

I agree that the radioactive iodine was probably overdone, causing hypothyroidism, and would have opted for a less drastic solution in the first place.

I have found that when I get my hypothy-

roid patients "almost there" with natural thyroid, adding Iodine (as with *Iodora®*) usually gets them where they want to be in 3 to 6 months. In addition to *Pressure-FX* for your high blood pressure, you might add *MPA Caps* (Magnesium-Potassium Aspartate) as well as an additional gram or two of *Potassium* and maybe enough additional *Magnesium* to bring you up to "bowel tolerance." Two or three grams per day of *Arginine* (on an empty stomach) should help with weight loss and blood pressure control (as well as to balance your sugar and insulin). To help with weight loss and blood pressure, also ask your physician to prescribe Metformin®, 500 mg three times per day. Alternatively, you can use VRP's *GluControl™* or *AGEBlock™*.

Hope these suggestions help.  
Ward Dean, M.D.

### Methamphetamine Withdrawal

Dear Dr. Dean,

I am contacting you for any suggestions you might provide for my son who has a six-month addiction to methamphetamine. He is at the point where he wants to stop using, but has failed on his own several times. We are looking at residency programs but before we can make that decision, within a few days from not using meth he will get into a nothing state (as he describes it). I interpret this to be a low dopamine condition. At this point he will have the urge to re-dose with methamphetamine.

I am thinking of giving him the following. In the morning, on an empty stomach: *L-Tyrosine* and *L-Phenylalanine* 1,000 mg each, *Vitamin B6* 50 mg, *Deprenyl*, *Hydergine®* 5 mg, *Galantamine* 1 mg, *Vitamin E* 200 IU (d,l-acetate), *Alpha Lipoic Acid* 100 mg, and *Bioperine®* 4 mg. Before he goes to sleep in the evening, I am also thinking of giving him: 50 mg *5-Hydroxytryptophan*, 3 mg *Melatonin*, 50 mg *Vitamin B6*, 200 IU *Vitamin E* (d,l-acetate), 100 mg *Alpha Lipoic Acid*, and 5 mg *Bioperine*. Any suggestions on changing this regimen will be very much appreciated.

Mr. K.

Dear Mr. K.,

You went far beyond what I would have recommended. If you can get him to take that much stuff, well and good. I think that the most important things on your list are

*Tyrosine* and *Phenylalanine...* but I don't usually recommend them both. I've found that some people seem to prefer *Phenylalanine*, and others prefer *Tyrosine* (one step closer to dopamine). If only one is used at a time, I agree on the dosage—up to 2 grams of either one. Have him try one for a week or so, and then switch to the other, and see if he has a preference, or can notice the difference. *Tyrosine* will probably have a more rapid onset. Good luck. I know what a struggle this will be for you both.

Ward Dean, M.D.

### Low pH Levels

Dear VRP,

Recently I did a saliva test and my pH levels are as low as the chart shows. What can I take to raise the level?

Ms. D.

Dear Ms. D.,

What a great question. As you are aware many experts believe keeping the body alkaline is important for overall good health. It is ideal to take your oral pH at least 2 hours away from food. I recommend that my patients focus on increasing vegetables and fruits, decreasing grains and eating a moderate amount of red meat. Also I often recommend that a person supplement with an organic green drink (such as VRP's *Primary Greens Plus™*), because it is the rare individual who truly consumes enough fresh produce.

Also, since gum and total oral health can affect the accuracy of salivary pH testing, I recommend that *Xylitol* gum and mints be used to help keep oral health in a more optimal range. If there is any gum disease (gingivitis) I tell my patients to open up a capsule of *CoQ10* and swish it in their mouth for 30-60 seconds, then swallow.

It will be interesting to hear how increasing the greens, limiting the heavy proteins, and lowering the overall carbs alters your pH.

Sincerely,  
Chris D. Meletis, ND

Be sure to visit the dear doctor section at [www.vrppet.com](http://www.vrppet.com) where you'll find questions and answers like these about your pets.

You can also ask questions at [dearvet@vrppet.com](mailto:dearvet@vrppet.com)

# Vitamin K2: More Than Just The “Koagulation” Vitamin

By James South, MA

[Editor's Note: This is the fifth in a series of articles paying tribute to our departed colleague James South. We are re-printing some of his most memorable articles in order to pay tribute to his vast knowledge about nutritional supplements. By continuing to share his knowledge, we are hoping to carry on his legacy.]

Vitamin K is one of the fat-soluble vitamins, yet it has received far less attention from the supplement-consuming public than its more famous “cousins” A, D and E. Discovered in 1929 in Denmark, vitamin K was thought to be useful only to promote normal blood coagulation, as part of the complex “clotting cascade” that keeps us from bleeding to death from cuts or broken internal blood vessels. Vitamin K even got its name from the first letter of the Danish word koagulation.

Research over the last 25 years has gradually given a new and more expanded view of the role of K. It is now known to be essential for bone health, and may also be important to prevent atherosclerosis and calcified arterial plaque. It may also be crucial for brain health.

## The Three Forms of K

The term “vitamin K” refers to a family of related compounds, whose members all have the basic “clotting power” of K (Fig. 1). Vitamin K1 (phylloquinone or phytonadione) is formed by plants, and is the main dietary source of K. A diet high in green vegetables such as kale, spinach, broccoli, lettuce and cabbage might provide hundreds of micrograms of K1 per day.<sup>1</sup> The FDA's RDA (recommended daily allowance) for K is 80 mcg per day. Vitamin K2 (menaquinones, menatetrenone) refers to a group of related compounds, menaquinones 2-9. Some menaquinones are produced by our gut bacteria, but the evidence suggests this K2 is poorly absorbed, if at all.<sup>2,3</sup> Humans and animals normally convert some ingested K1 to menaquinone-4 (MK4), also called menatetrenone.<sup>4,5</sup> This

is the specific mammalian K2. Vitamin K3 (menadione) has the same naphthoquinone “head” as K1 and K2, but lacks a side chain. K3 is a synthetic form of K.<sup>1</sup>

## K and Bone Health

Studies conducted with humans and animals over the past 20 years have gradually made it clear that vitamin K is essential to optimal bone health, especially among post-menopausal women and elderly men. Yet it is the K2 form that has been shown to be the bone builder. Kaneki and colleagues in Japan compared K2 levels in the blood of 24 women with osteoporotic vertebral fractures and 36 elderly women without fractures. Serum levels of K1 were virtually identical in both groups, yet serum levels of MK7 (a K2 form found in soy natto, a popular Japanese food) were twice as high in the nonfracture group compared to the fracture group.<sup>6</sup>

Japanese women tend to suffer much less osteoporosis fractures than Western women. A recent study found that fracture incidence within Japan was strongly correlated to natto intake and blood serum levels of MK7. MK7 levels were 5.26 ng/mL in Tokyo women, 1.22 in Hiroshima, and 0.37 in British women. Natto consumption is high in Tokyo, lower in Hiroshima, and non-existent in Britain. The authors concluded: “A statistically significant inverse correlation was found between incidence of hip fractures in women and natto consumption [chief dietary source of MK7] in each prefecture [dis-

trict] throughout Japan.”<sup>7</sup> In other words, the more natto, the more MK7, and the fewer fractures.

## Menatetrenone (K2) and Bone Health

The Japanese have pioneered the use of K2 (menatetrenone, or MK4) supplements to treat osteoporosis. Rat studies showed the safety and efficacy of K2.<sup>8,9,10</sup> Over the past decade, more than a dozen human clinical trials have shown the safety and efficacy of K2 to treat a variety of forms of osteoporosis. The protocol for K2 use is consistent throughout these studies: 15 mg K2 taken three times per day with fat-containing meals. Adequate dietary fat is essential for optimal K2 absorption.<sup>11</sup>

Many of the studies have focused on K2's ability to reverse, or at least seriously slow down, post-menopausal osteoporosis. Due to the decrease in bone-friendly estrogen after menopause, osteoporosis with consequent fractures is common among women.

One 24-month study compared K2 to the biphosphonate drug etidronate, with

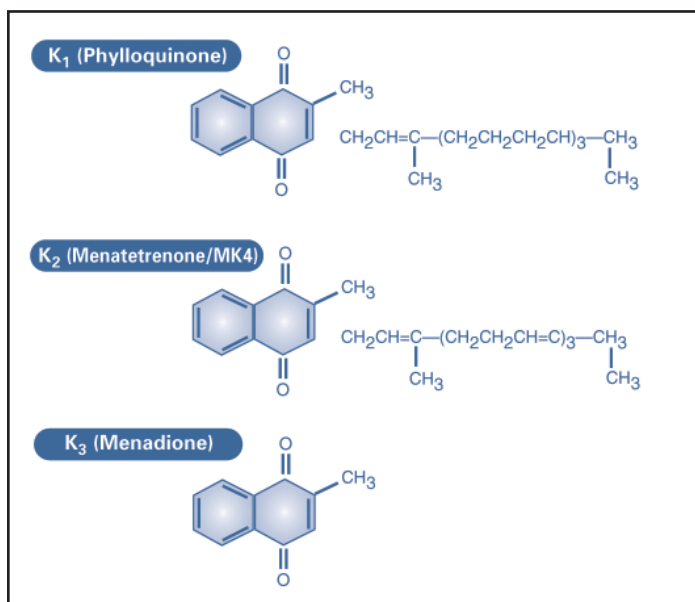


Figure 1. The three forms of vitamin K.

the control group getting only a calcium supplement. After two years, both the etidronate and K2 groups had significant increases in bone mineral density compared to the control group, with etidronate doing even better than the K2. Yet the incidence of new vertebral fractures was radically less in both the K2 and etidronate groups: 65 percent and 70 percent less than the control groups, respectively.<sup>12</sup>

Another study found that “a combination of risedronate and vitamin K2 has a synergistic effect on preventing the deterioration of trabecular bone architecture induced by estrogen deficiency. Some studies have shown that combined treatment with etidronate and vitamin K2 appears to be more effective than etidronate alone in the prevention of new osteoporotic vertebral fractures.”<sup>13</sup> Other studies have found that the combination of vitamin D3 and K2 works better than D3 or K2 alone in increasing bone mineral density in postmenopausal osteoporotic women.<sup>14</sup> Yet other studies have obtained excellent results in increasing bone mineral density/reducing fracture rates with just 45 mg K2 per day.<sup>15,16</sup>

### More on K2 and Bone Health

Clinically, K2 also has been used with success in other forms of osteoporosis. K2 has successfully prevented the bone loss that normally occurs in kidney dialysis patients.<sup>17,18</sup> K2 stopped bone loss in liver cirrhosis patients.<sup>19</sup> In an 11-month study of recovering anorexia patients, K2 cut bone loss 60 percent compared to the control group.<sup>20</sup> In a 12-month study of 120 female Parkinson’s disease patients, the fracture incidence in the K2 group was only 10 percent of the control group’s fracture rate!<sup>21</sup> K2 also increased bone mineral density and reduced the fracture rate in a 12-month study of 108 stroke patients with one-sided paralysis.<sup>22</sup>

### K2: Multiple Effects

K2 has been shown to help build strong bones through multiple mechanisms. It protects osteoblasts, the cells that build new bone, from apoptosis (programmed cell death).<sup>23</sup> K2 also causes many mature osteoclasts to undergo apoptosis, and

inhibits the formation of new ones.<sup>24</sup> Osteoclasts are the cells that destroy existing bone. While some are necessary, with aging and osteoporosis osteoclasts become more numerous, while osteoblasts become fewer in number. So bone destruction overwhelms bone building. In addition, K2 inhibits the formation and bone-destroying activity of prostaglandin E2 (PGE2), an inflammatory eicosanoid intimately involved at the molecular level in promoting bone breakdown.<sup>25,26</sup> Another study that showed K2 inhibited the bone-destroying activity of PGE2 found that K1 had no PGE2-inhibiting activity.<sup>27</sup> K2 also preserves the microstructure of trabecular bone, the spongy bone found at the ends of long bones, which tends to disintegrate with age or osteoporosis.<sup>28,29</sup> Furthermore, it opposes the bone-destroying effects of glucocorticoids (cortisol, prednisone).<sup>30,31</sup>

### K2 and Cancer

In 1994 it was reported that K2, but not K1, could promote the differentiation of various types of leukemia cells. “Leukemia” is a broad, general term used to describe various malignant blood cell diseases that involve abnormally large numbers of immature white cells and damaged bone marrow. If not successfully treated, leukemia is usually eventually fatal. Toxic chemotherapy drugs are often used to treat it. By causing the leukemia cells to differentiate, K2 helps the cells to transform into more normal, nonleukemic cells. According to the study, “[Vitamin] K2 may be safely used in differentiation therapy [of leukemia] in combination with other inducers.”<sup>32</sup> In 1997, another research group reported that K2 “showed a potent apoptosis-inducing activity for all freshly isolated leukemia cells tested” but that K1 had no anti-leukemia activity.<sup>33</sup>

By 2001, a Japanese research group had found that K2 had a dual effect, depending on the unique genetic makeup of the various leukemia cells tested. K2 killed some leukemia cells by apoptosis, and those that were genetically resistant to K2’s apoptotic activity were stimulated to differentiate instead. Miyazawa and colleagues con-

cluded: “The dichotomous nature of [vitamin] K2 against leukemia cells appears to have clinical benefits for the treatment of patients with leukemias and myelodysplastic syndromes.”<sup>34</sup>

In 2003, the Miyazawa group published a study showing that K2 could kill (by apoptosis) a variety of different types of lung cancer cells, including small cell carcinomas, adenocarcinomas, squamous cell carcinomas and large-cell carcinomas. “Since [vitamin] K2 is a safe medicine without prominent adverse effects...our data strongly suggest the therapeutic possibility of using [vitamin] K2 for the treatment of patients with lung carcinoma.”<sup>35</sup>

In 2004 another Japanese research group found that K2 inhibits the growth and invasion of hepatocellular carcinoma (liver cancer) cells both in vitro and in vivo. Giving K2 to “mice inoculated with liver tumor cells reduced both tumor growth and body weight loss.”<sup>36</sup> In July, 2004, the first human clinical trial results were announced in JAMA (*Journal of the American Medical Association*). Forty women diagnosed with viral liver cirrhosis between 1996 and 1998 were randomly assigned either to a group receiving 45 mg K2 per day or the control group. By the end of the study, two of 21 women given K2 had developed liver cancer, while nine of 19 control group women had developed liver cancer. The results were found to be statistically significant, and a role for K2 in preventing liver cancer was proven.<sup>37</sup>

### K2: Your Arteries’ Best Friend?

Animal studies have shown that K2, but not K1, can inhibit the calcification of arterial plaque. As a recent review notes: “Calcification of the vessel walls is one of the features of atherosclerosis and is by itself considered to be a risk factor for plaque rupture.”<sup>38</sup> And plaque rupture in a heart artery is often the final trigger for a (possibly fatal) myocardial infarction (heart attack). A 1996 study found that high-dose K2 inhibited the increase in aortic or kidney calcium induced by megadose synthetic vitamin D2. The authors noted that

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# Vitamin K2

Continued from page 11

“a pharmacological dose of vitamin K2 might have a usefulness for the prevention and treatment of arteriosclerosis with calcification.”<sup>39</sup> A 1999 study found that high-dose K2 could inhibit the increase in aortic calcium in rats made arteriosclerotic by high-dose D2 and an atherogenic diet.<sup>40</sup>

A 1997 rabbit study found that high dose K2 “prevents both the progression of atherosclerosis and the coagulative tendency by reducing the total-cholesterol, lipid peroxidation and factor X activity in plasma, and the ester cholesterol deposition in the aorta of hypercholesterolemic rabbits.”<sup>41</sup> In 2003 Spronk and colleagues reported “that MK-4 [K2] and not K1 inhibits warfarin-induced arterial calcification.”<sup>42</sup>

Most importantly, a study published in 2001 examined more than 4,000 humans followed from 1990 to 1996. Subjects were examined for their dietary K2 intake. Those with a “high” K2 intake (greater than 33 mcg per day) had only 43 percent of the risk of suffering a heart attack compared to the low K2 group (less than 22 mcg per day). The risk of dying from a heart attack was only 37 percent as high in the high-K2 group compared to the low-K2 group. “The dietary intake of vitamin K1 showed no consistent relation with cardiac events or aortic atherosclerosis.”<sup>43</sup>

## K2: Anti-Aromatase?

One intriguing study on male rats suggests that K2 might be useful in suppressing the excess estrogen all too common in aging men. When aging male rats were fed a calcium-deficient diet, their serum estradiol levels rose 430 percent. K2 significantly reduced the elevated estrogen levels. The estrone level in serum of the K2-fed rats fell to a level lower than the control rats fed a regular calcium diet. The study’s authors suggest that K2 suppressed testicular aromatase in calcium deficient rats, reducing estrogen production, and that the increased estrogen production in the calcium-deficient rats not given K2 might be a compensating mechanism to

prevent osteoporosis.<sup>44</sup> This in turn suggests that the frequent elevation of estrogen seen in aging men might be the body’s way of preventing osteoporosis, which is more common in women than men. Taking high-dose K2 just might suppress male aromatase activity, suppressing male estrogen overproduction, yet still prevent osteoporosis.

## Megadose K2: Safety

The high dose of 45 mg K2 daily has been used in dozens of human studies, many lasting one to two years. Many of these studies emphasize the safety of K2. “Administration of menatetrenone [MK4/K2] was well tolerated. Given the absence of toxicity, menatetrenone can be recommended for all patients with MDS-RA.”<sup>45</sup> “The adverse events were 2 cases of mild skin rash [out of 43 patients] which subsided after cessation of medication.”<sup>16</sup> “menatetrenone can be used safely for [at least] 1 year in CAPD patients.”<sup>17</sup> “No adverse effects of vitamin K2 were noted.”<sup>19</sup> “No adverse effect was observed.”<sup>30</sup>

One concern some people might have with high-dose K2 is that it might cause “overcoagulation” of the blood. The 1997 rabbit study previously mentioned specifically noted that “The excessive dose of vitamin K2...did not promote the coagulative tendency in the rabbits.”<sup>41</sup>

A 2001 study very carefully examined a range of variables that might indicate excessive blood-clotting tendency due to high-dose K2 in 29 elderly patients. The authors noted: “No changes in the sensitive molecular markers such as TAT and F1+2, which reflect the amount of thrombin [a pro-clotting substance] generated in the bloodstream, were observed...These results indicate that MK4 [K2] can be administered safely, with regard to maintaining the hemostatic balance [normal blood clotting], to osteoporotic patients receiving no anticoagulant therapy.”<sup>46</sup>

The one caution in using high-dose K2 is the use of warfarin (Coumadin®) anticoagulant therapy. Anyone taking warfarin or other similar “blood-thinning” drugs must NOT use high-dose K2. Indeed, such

patients are usually counseled to avoid even high K1-containing foods, such as green vegetables, since warfarin works by opposing vitamin K’s blood coagulation effects.

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## Prostate Health

*Continued from page 5*

cancer and calcium rich foods (dairy) seem to increase risk.

Vitamin D3 actively induces cell death (apoptosis) in cancer cells and is a regulator of cell proliferation.<sup>17-18</sup>

### Progesterone

Progesterone is not just a “female hormone.” It is produced in men via the adrenal and testicular tissue. Male progesterone levels decline with aging similar to male testosterone levels. With prolonged stress, depletion of progesterone occurs as the stress hormone cortisol is derived from progesterone.

Progesterone inhibits the conversion of testosterone to DHT. DHT is a weaker androgen than testosterone, and thus lowers the androgen/estrogen ratio in favor of estrogen. In addition, DHT is a far more potent stimulant of prostate cell growth than testosterone.<sup>19</sup> *In short, getting your hormone levels tested and working towards balancing not only testosterone but also estrogens and progesterone is foundational to creating a comprehensive prostate health program.*

### Other Nutrients

Diindolymethane (BioDIM<sup>®</sup>) and indole-3-carbinol (I3C), the natural derivatives of cruciferous vegetables, can help both men and women balance estrogen levels. Consequently, they can be tremendously supportive to the prostate. In addition, low plasma selenium is associated with a 4- to 5-fold increased risk of prostate cancer.

### Points to Remember

It is never too early to invest in maintaining prostate health. Waiting for symptoms means that the hill one will have to climb to re-establish wellness shall be steeper and more formidable. Clinically, it is recommended that men from 40 onwards begin to focus on dietary, lifestyle and supplement regimes that help hedge the statistical likelihood of being diagnosed with prostate disease. The scientific evidence strongly supports pursuing a preventive course; thus, men should be encouraged to

take control of their prostates’ destiny and reap the health dividends. The steps mentioned in this article are a must for those serious about taking charge of their prostate health: Sustain prostate nutrient levels; Balance and regulate steroid hormones to healthy levels; Actively regulate and control excessive conversion of testosterone to DHT; Reduce DHT receptor binding; and decrease prostatic inflammatory promoters such as prolactin.

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# Neptune Krill Oil™:

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### Supports Healthy Cholesterol, Joints and Menstrual Health

VRP Staff

**N**eptune Krill Oil™ has demonstrated anti-inflammatory actions, supports healthy cholesterol and blood sugar levels, and contributes to skin and menstrual health. People using NKO for overall health can rest easy that they are consuming an environmentally friendly product—good news given NKO's role in many aspects of health.

Scientists have investigated NKO's role in a wide array of conditions. In one study of 70 women, NKO-treated subjects noted a significant reduction in such PMS symptoms as feeling overwhelmed, stressed, irritable and depressed and breast tenderness and joint pain. After taking NKO, subjects also reported an increase of alertness, energy and well-being. Other studies have shown NKO favorably affects cholesterol levels. In a 12-week, double-blind, randomized study of subjects with mildly high to very high blood cholesterol and triglycerides 1 or 1.5 grams of Neptune Krill Oil per day caused a 13.4-percent and 13.7-percent reduction in mean total cholesterol. Subjects treated with 2 or 3 grams Neptune Krill Oil showed a significant reduction in mean total cholesterol of 18 percent. Levels of LDL, the “bad” cholesterol, also plummeted in the Neptune Krill Oil group, while levels of HDL “good” cholesterol rose in subjects taking Neptune Krill Oil. Higher doses (2 and 3 grams) resulted in a significant 27 to 28 percent reduction of triglycerides. Subjects in the cholesterol study also experienced a drop in blood glucose levels. NKO also has reduced joint pain and stiffness and lowered levels of the inflammatory marker C-reactive protein in osteoarthritis patients.

#### Environmentally Safe

Humans aren't the only ones to benefit from krill consumption. This organism is also a primary food source for Antarctic

baleen whales and for other ocean dwelling animals. This article will demonstrate that plenty of krill exists in the ocean to support both human and whale consumption and that NKO is an environmentally friendly way to obtain omega-3s.

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the official and most reliable international scientific organization concerning krill fishery, has studied the issue of ecological sustainability and has concluded that over fishing of this organism is not occurring.

Found in all oceans, krill is a generic term for up to 85 species of marine zooplanktonic crustaceans called Euphausiacea or Euphausiids. Today, there are almost exclusively two species harvested: Pacific Krill (*Euphausia pacifica*) and Antarctic Krill (*Euphausia superba*), from which NKO is made. Antarctic Krill is harvested mostly in the Atlantic section of the Southern Ocean surrounding the Antarctica continent (approximately 110,000 metric tons per year). In the Southern Ocean, no krill shortage has been documented. As mentioned in a *Nature* article on the topic (Vol. 432, November 4, 2004), “krill densities are high near South Georgia”—NKO's fishing area.

Because so many ocean animals depend on krill, numbers could never drop dramatically without major declines in the higher predators. However, the numbers of some predators that live almost exclusively on krill have increased.

Another factor is the number of krill on the planet compared to the number fished. Earth's oceans maintain annually an amount of krill—i.e. standing stock or natural net biomass after predation and natural mortality—of about 500 million metric tons. The richest krill marine area—the

Southern Ocean around the Antarctic continent—has a standing stock of at least 135 million metric tons.

An historical krill harvesting peak (528,000 metric tons per year) was reached during the early 1980s by the ex-USSR. Since the USSR dismantled its krill fishing fleet in 1991, the average world annual catch dropped to 111,000 metric tons (from 1999 to 2003). This is considerably less than the 500 million metric tons available and indicates that krill fishing has declined over the years rather than risen. From an historic standpoint, the maximum catches and the actual ones correspond to 0.39 percent and 0.08 percent respectively of the total known standing stock of Antarctic krill.

Because it was apparent that plenty of krill remained to be fished without causing an ecological crisis, CCAMLR increased the previous total precautionary catch limit of 1.95 million metric tons to the new catch limit of 4.89 million metric tons. That latest amount corresponds to only 3.6 percent of the conservative standing stock figure of 135 million metric tons of krill that exists near Antarctica. The mean annual world catch over the last five previous years (111,000 metric tons) corresponds to only 2.3 percent of the new precautionary catch limits.

The new krill total annual precautionary catch limit acceptable by CCAMLR standards is only about 5.8 percent of the 85 million metric tons of krill that baleen whales consume. But the actual low total annual catch of 110,000 metric tons (from 2002-2003) equals about 0.1 percent of the baleen whales' consumption.

Over the next five years, NKO's producers plan to use only a few percentages of the 110,000 metric tons annual catch, without any significant loss of krill due to a new process, recuperating virtually 100 percent of the total krill processed.

# NUTRITION REVIEW

## Fruit and Vegetable Juices Help Cognitive Function

People who regularly drink fruit and vegetable juices have a lower risk of developing Alzheimer's disease, a new study indicates.

Growing evidence suggests that oxidative damage caused by the beta-amyloid peptide is responsible for the development of Alzheimer's disease and that this oxidative damage may be hydrogen peroxide mediated. Many polyphenols, which are the most abundant dietary antioxidants, possess stronger neuroprotection against hydrogen peroxide than antioxidant vitamins alone.

Given this fact, researchers tested whether consumption of fruit and vegetable juices, containing a high concentration of polyphenols, decreases the risk of Alzheimer's disease. They studied subjects

participating in the Kame Project, a population-based prospective study of 1,836 Japanese Americans in King County, Washington, who were dementia-free at baseline (1992-1994) and were followed through 2001. The average age of the subjects was 72, with 54 percent of them women.

Researchers used a food frequency questionnaire to collect information on the subjects' dietary consumption of fruit and vegetable juices. The study authors assessed cognitive function every two years for up to 10 years.

Results indicated that subjects who drank three or more glasses of fruit or vegetable juice per week were 76 percent less likely to develop Alzheimer's disease than those who drank less than one serving per week. The association between fruit and vegetable juice consumption and

reduced Alzheimer's risk was even more pronounced in subjects who carried the apolipoprotein E epsilon-4 allele, a genetic marker linked to late-onset Alzheimer's disease, the most common form, which usually develops after the age of 65.

According to the researchers, "Fruit and vegetable juices may play an important role in delaying the onset of Alzheimer's disease, particularly among those who are at high risk for the disease."

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Dai Q, Borenstein AR, Wu Y, Jackson JC, Larson EB. Fruit and vegetable juices and Alzheimer's disease: the Kame Project. *Am J Med.* 2006 Sep;119(9):751-9.

Individuals who are not consuming enough fruits and vegetables in their diets may want to obtain additional polyphenols by consuming an organic green drink such as VRP's Primary Greens Plus™.

## PET CORNER

By Gary L. Ailes, DVM

### EpiCor™ and Pets

The immune system is an interesting aspect of both humans and animals. Without it, our pets would succumb to any one of the billions of microorganisms that inhabit the environment. When the immune system is in a state of malfunction that causes suppression, both humans and animals become sick more often. When the immune system is operating correctly, our animals can handle most if not all the challenges they encounter.

Many factors—known and unknown—can trigger immune system suppression. Chemicals in the environment, toxins from a myriad of sources, chronic inflammation in the body and many other factors including stress can cause problems within our pets' systems.

Suppression of the immune system, from any factor, leaves our pets more susceptible to disease. Any challenge while in this state is likely to lead to a more severe disease. If the challenge is a more virulent (powerful) organism, our beloved animals may succumb to the infection. In addition, just like in humans, hyperactivity of a pet's immune system leads to the animal's body destroying portions of itself. This causes the body to identify part of itself as a foreign invader and mount an immune response.

EpiCor™ is a product that can be listed as an immune modulator. While it's listed as a human product, a similar version was first used in animals as a feed additive. It was noticed that the folks working in the production of the

material had fewer colds, flus or other diseases. Since that time, there has been some good research done and a number of papers are in the process of submission to peer reviewed journals. More information is available about EpiCor at [www.vrp.com](http://www.vrp.com).

EpiCor can be used to help maintain health and to help bring a healthy balance back into our pets' lives. I believe it will make a real difference considering the consistent attacks on homeostasis that our pets face today.

*For more information about raising a healthy pet, please visit [www.vrppet.com](http://www.vrppet.com).*

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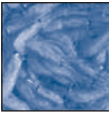
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